

LAW OFFICES

DENNIS L. THOMTE
DENISE C. MAZOUR
SHANE M. NIEBERGALL
FACSIMILE: (402) 392-0734

THOMTE, MAZOUR & NIEBERGALL, L.L.C.
PATENT, TRADEMARK AND COPYRIGHT CAUSES
SUITE 1111 - 2120 SOUTH 72ND STREET
OMAHA, NEBRASKA 68124
(402) 392-2280

FACSIMILE: Ricoh Fax2500L

FAX NUMBER: (402) 392-0734

TO: Examiner Joe Waks

FIRM NAME: USPTO

FROM: Dennis L. Thomte

FAX NO.: (703) 746-4176

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Application of
Jeffrey O. Willis, et al.

Serial No.: 09/847,615

Filed: May 2, 2001

Title: METHOD AND MEANS FOR
MOUNTING A WIND TURBINE
ON A TOWER

Group No.: 2834

BEFORE THE BOARD OF
PATENT APPEALS AND
INTERFERENCES

Appeal No. _____

APPELLANTS' APPEAL BRIEF

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

Dear Sir:

REAL PARTY IN INTEREST

The appellants herein have assigned their rights to Valmont Industries, Inc., thus, Valmont Industries, Inc. is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences related to this case.

STATUS OF THE CLAIMS

This is an appeal of the Examiner's final rejection of claims 4-6. Claims 4 and 5 are independent claims with claim 6 depending from claim 4. Appellants believe that each of the claims stand by themselves and are individually allowable.

STATUS OF AMENDMENTS

1 Appellants filed an Amendment After Final Rejection on May 20, 2002. The
Examiner filed an Advisory Action in response thereto on June 11, 2002, stating that the
Amendment After Final Rejection would not be entered because the proposed
5 amendments contained therein purportedly raised new issues requiring further
consideration and/or search. There have been no other Amendments filed after the
final rejection.

SUMMARY OF THE INVENTION

10 The invention relates to a method and means for mounting a wind turbine on the
upper end of a supporting tower and more particularly to a method and means wherein
the turbine is winched up the length of the tower on a carriage which rolls along a track
or guide rail positioned at one side of the tower. (Page 1, lines 17-20).

15 The numeral 10 refers to a wind turbine assembly and includes a tower 12 which
may have a height of up to seventy meters or more. A support structure 14 is in the
form of a battered leg structure comprising legs 14A and 14B at one side of the tower
12 for stability purposes. Legs 14A and 14B are connected to the tower 12 by braces
15. The numeral 16 refers to a conventional wind turbine including a housing 18 which
20 houses various components of the wind turbine 16 such as a cooling system, generator,
gearbox, and a main shaft extending therefrom onto which a spinner/hub 20 is mounted
including rotor blades 22. The wind turbine 16 includes a conventional base portion 24
which is secured to the upper end of the tower 12. To this point, the wind turbine
assembly 10 is generally of conventional prior art construction except for the battered
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1 leg structure which stabilizes the tower 12, distributes the load on the tower 12, and
enables the tower 12 to be constructed of a lighter weight material. (Page 6, line 19 -
page 7, line 6).

5 The tower 12 is provided with a guide rail means 26 which in this case comprises
a pair of vertically disposed and horizontally spaced guide rails 28 and 30 positioned at
one side of the tower 12 with the guide rails 28 and 30 extending between the lower and
upper ends of the tower 12. Although it is preferred that a pair of guide rails 28 and 30
be provided, it is possible that any number of guide rails could be provided, if desired.
10 Further, the guide rails 28 and 30 could be positioned on the opposite sides of the tower
12 and could take shapes other than that disclosed. For example, guide rails could be
T-shaped if desired. (Page 7, lines 7-14).

15 The numeral 32 refers generally to a carriage which is adapted to move along the
guide rails 28 and 30 and which includes a platform 52 adapted to have the wind turbine
16 secured thereto and which includes means for pivoting the platform 52 approximately
ninety degrees with respect to the carriage, as will be described in more detail
hereinafter. It is preferred that the carriage 32 be removably positioned on a wheeled
frame such as a truck or trailer 36 having a pair of spaced-apart guide rails 38 provided
thereon which are adapted to mate with or register with the lower ends of the guide rails
20 28 and 30 so that the carriage 32 may be moved from its position on the wheeled frame
means 36 onto the guide rails 28 and 30. (Page 7, lines 15-23).

25 Carriage 32 includes a pair of projecting frame members 40 and 42 having
recessed portions 44 and 46 formed therein, respectively, which are adapted to receive

1 the guide rails 28 and 30 and which are also adapted to receive the guide rails 38 when
the carriage 32 is mounted on the wheeled frame means 36. It is preferred that the
recessed areas 44 and 46 be provided with a plurality of slides or rollers 48 provided
thereon to facilitate the sliding movement of the carriage 32 with respect to the guide
5 rails 28 and 30. Generally speaking, carriage 32 includes a frame means 50 having the
platform 52 pivotally secured thereto and which is movable therewith by means of
power cylinder 54 or some other mechanism. It is preferred that a slide mechanism 56
be slidably mounted on platform 52 to enable the slide mechanism 56 to be moved
towards tower 12 to enable the turbine 16 to be moved from the carriage to the upper
10 end of the tower 12 as will be more fully described hereinafter. Slide 56 includes means
for having the wind turbine 16 selectively secured thereto. (Page 7, line 24 - page 8,
line 12).

15 The numeral 58 refers to a winch which is preferably positioned at the lower end
of the tower 12 and which has a winch cable 60 extending therefrom. Winch cable 60
preferably extends around pulley 62 and thence upwardly to the upper end of the tower
12 wherein it extends over pulleys 64 and 66. Winch cable 60 then extends
downwardly for connection to the carriage 32. (Page 8, lines 13-17).

20 The tower 12 is first erected in conventional fashion, except for the structure 14,
with the guide rails 28 and 30 being provided thereon as previously described. When it
is desired to mount the turbine 16 on the upper end of the tower 12, the wheeled frame
means 36 is positioned adjacent the lower end of the tower 12 so that the guide rails 38
mate with the lower ends of the guide rails 28 and 30. The winch cable 60 is then
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1 connected to the carriage 32 and the winch 58 is actuated so that the cable 60 pulls the
carriage 32 from the wheeled frame means 32 onto the lower ends of the guide rails 28
and 30. When the carriage 32 has been positioned on the lower end of the guide rails
28 and 30, the platform 52 is pivotally moved from a vertically disposed position to a
5 horizontally disposed position. At that time, the wheeled frame means 36 may be
moved away from the lower end of the tower 12. When the platform 52 is in its
horizontally disposed position, a small crane is then used to lower the wind turbine 16
onto the slide 56 to which it is securely fastened. The platform 52 is then pivotally
10 moved from its horizontally disposed position to a position wherein the wind turbine 16
is substantially vertically disposed. When the wind turbine 16 is substantially vertically
disposed, the spinner/hub 20 with the rotor blades 22 attached thereto is lowered onto
the main shaft of the wind turbine 16 by means of a small crane or the like. It should be
noted that the rotor blades 22 may be secured to the spinner/hub 20 after the
15 spinner/hub 20 has been mounted on the wind turbine 16. (Page 8, line 18 - page 9,
line 15).

When the spinner/hub 20 and rotor blades 22 have been mounted on the wind
turbine 16, the carriage 32 with the wind turbine 16 mounted thereon is winched to the
20 upper end of the tower 12 by means of the winch 58. When the carriage 32 has been
winched to the upper end of the tower 12, the platform 52 is pivotally moved from its
vertically disposed position to a horizontally disposed position. The slide 56 is then
moved towards the upper end of the tower 24, so that the wind turbine 16 may be
removed from the slide 56 and secured to the upper end of the tower 24. When the
25

1 turbine 16 has been secured to the upper end of the tower 12, the platform 52 is
pivotaly moved from its horizontally disposed position to a vertically disposed position.
The carriage 32 is then lowered on the guide rails 28 and 30 to the lower end of the
tower. The wheeled frame means 36 is then positioned adjacent the lower end of the
5 tower so that the guide rails 38 thereof register once again with the guide rails 28 and
30. The carriage 32 is then moved from the guide rails 28 and 30 onto the guide rails
38 of the wheeled frame means 36 so that the carriage 32 is positioned on the wheeled
frame means 36. The wheeled frame means 36 and the carriage 32 may then be
moved to another location wherein another wind turbine assembly 10 is to be erected.
10 (Page 9, line 16 - page 10, line 8).

The turbine 16 may be installed or mounted on the upper end of the tower in a
somewhat different way such as will now be described. As in the previously described
method, when it is desired to mount the turbine 16 on the upper end of the tower 12, the
15 wheeled frame means 36 is positioned adjacent the lower end of the tower 12 so that
the guide rails 38 mate with the lower ends of the guide rails 28 and 30. The winch
cable 60 is then connected to the carriage 32 and the winch 58 is actuated so that the
cable 60 pulls the carriage 32 from the wheeled frame means 36 onto the lower ends of
the guide rails 28 and 30. When the carriage 32 has been positioned on the lower end
20 of the guide rails 28 and 30, the platform 52 is pivotaly moved from the vertically
disposed position to a horizontally disposed position. At that time, the wheeled frame
means 36 may be moved away from the lower end of the tower 12. When the platform
52 is in its horizontally disposed position, the carriage 32 is then winched upwardly
25

1 along the guide rails 28 and 30 until the carriage has reached a height which is greater
than the rotor-swept area. The wind turbine 16 is then positioned on the platform 52 of
the carriage 32 by means of a small crane with the wind turbine 16 being horizontally
disposed and with the main shaft thereof extending laterally from one side of the tower.
5 The spinner/hub 20 with the rotor blades 22 attached thereto are then secured to the
main shaft of the wind turbine 16 with the rotor blades being vertically disposed. (Page
10, line 9 - page 11, line 2).

10 When the spinner/hub 20 and the rotor blades 22 have been mounted on the
wind turbine 16, the carriage 32 with the wind turbine 16 mounted thereon is winched to
the upper end of the tower 12 by means of the winch 58. When the carriage 32 has
been winched to the upper end of the tower, the slide 56 is then moved towards the
upper end of the tower 24 so that the wind turbine 16 may be removed from the slide 56
and secured to the upper end of the tower 24. When the turbine 16 has been secured
15 to the upper end of the tower 12, the carriage 32 is then lowered on the guide rails 28
and 30 to the lower end of the tower, as in the previously described method. (Page 11,
lines 3-10).

20 The advantage of the alternate method is that the wind turbine is always in a
horizontally disposed position. In some cases, if the wind turbine was vertically
disposed and components of the turbine have been previously filled with lubricating
fluids, cooling fluids, etc., some leakage could possibly occur. By maintaining the wind
turbine in the horizontally disposed condition, leakage problems are eliminated. (Page
11, lines 11-15).

1 Although the preferred method of moving the wind turbine to the upper end of the tower is with a winch, it is possible that other means could be utilized. For example, some form of ratcheting mechanism could be utilized. A rack and pinion gear arrangement which is motor-driven could also be used. (Page 11, lines 16-19).

5 ISSUES

(A) Whether claims 4 and 6 are anticipated by Gerd-Albrecht (DE 196 47 515 A1) under 35 U.S.C. § 102(b).

(B) Whether claim 5 is anticipated by Abe (U.S. Patent No. 4,311,434) under 35 U.S.C. § 102(b).

10 GROUPING OF CLAIMS

Claims 4 and 5 are independent claims with claim 6 depending from claim 4. Appellants believe that each of the claims define subject matter which is patentable and stand by themselves.

15 ARGUMENT

(A) Whether claims 4 and 6 are anticipated by Gerd-Albrecht (DE 196 47 515 A1) under 35 U.S.C. § 102(b).

20 The Examiner contends that Gerd-Albrecht discloses a method of mounting a wind turbine comprising the steps of removably mounting a wind turbine on a tower, positioning a wind turbine on the turbine support, moving the wind turbine to an upper end of the tower, securing the turbine to the tower, moving the turbine support downward, and removing the support from the tower.

1 Claim 4 specifically claims "positioning a wind turbine support on said tower;
moving said wind turbine support upwardly with respect to said tower to the upper end
thereof." (Claim 4, lines 4-6). (Emphasis added). Gerd-Albrecht does not teach such a
method in any manner. As disclosed in the figures of Gerd-Albrecht, the crane
5 mechanism is first positioned at the upper end of a support pole. Then an attaching
mechanism is lowered from the crane, the attaching mechanism is connected to the
turbine, and the turbine is hoisted upwardly. There is no teaching in Gerd-Albrecht
whatsoever that the turbine is placed on a support and then the support is moved
upwardly with respect to the support pole. Furthermore, there is no teaching in Gerd-
10 Albrecht that the turbine is placed on the support. As defined by the Merriam Webster
Dictionary, "on" means "to position over and in contact with: touching the surface of."
Merriam Webster Dictionary p. 366 (Home and Office ed. 1998). One of the problems
with the Gerd-Albrecht invention is that as the turbine is being hoisted upwardly, the
15 turbine is not restrained from movement caused by the wind or the general sway from
hoisting up the turbine. This problem is one of the very problems the present invention
addresses. Accordingly, Appellants respectfully submit that claim 4 is not anticipated by
Gerd-Albrecht.

20 Claim 6 depends from independent claim 4. Claim 4 is clearly allowable as
stated above. Inasmuch as claim 6 depends from independent claim 4, the same is
thought to be allowable. Accordingly, claim 6 is believed to be allowable in view of
Gerd-Albrecht.

1 (B) Whether claim 5 is anticipated by Abe (U.S. Patent No. 4,311,434) under
35 U.S.C. § 102(b).

5 The Examiner argues that Abe discloses all the limitations of claim 5.
Specifically, the Examiner contends that Abe teaches removably mounting a wind
turbine on a tower and the wind turbine being vertically movable on the tower. The
Appellant respectfully disagrees with the Examiner.

10 35 U.S.C. § 112 provides, in pertinent part, that the specification shall contain a
written description of the invention in such full, clear, concise, and exact terms as to
enable any person skilled in the art to which it pertains to make and use the same. In
Seymour v. Osborne, the Supreme Court of the United States addressed the level of
description required to enable a prior art patent or publication. The Court stated that
mere vague and general representations are not sufficient to enable those skilled in the
art or science to understand the nature and operation of the invention and carry it into
15 practical use. 78 U.S. (11 Wall) at 555. (Emphasis added).

20 Appellants assert that although Abe suggests, at Col. 2, lines 13-15, that the
mount 12 may be lowered down to the lower end of the tower or even removed from the
tower, such a suggestion is merely a general and vague representation. There is
absolutely no description or suggestion as to how the mount 12 could be removed from
the tower. The mount 12 includes collars secured thereto which embrace the guides
1a. As seen in Figure 4, the guides 1a extend completely down to the supporting
surface of the tower. There is absolutely no description whatsoever how the collars
could be removed from the guides 1a. Therefore, the Abe reference is non-enabling for
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1 the teaching that the mount could be removed from the tower. Regarding claim 5 of the
present invention, claim 5 specifically states that a wind turbine support is removably
mounted on the tower for supporting a wind turbine thereon. Inasmuch as the Abe
reference is non-enabling as to how the wind turbine support could be removed from the
5 guides 1a, Abe cannot anticipate claim 5.

CONCLUSION

The foregoing has clearly shown that claims 4 and 6 are not anticipated under 35
U.S.C. § 102(b) on the basis of the Gerd-Albrecht reference. Further, the foregoing has
clearly shown that claim 5 is patentable over Abe. Accordingly, the Examiner's final
10 rejection should be reversed.

Respectfully submitted,



DENNIS L. THOMTE
Registration No. 22,497
THOMTE, MAZOUR & NIEBERGALL
Attorneys of Record

15 Suite 1111, 2120 S. 72nd St.
Omaha, NE 68124
(402) 392-2280

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